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ABSTRACT

Changes caused by technology, economy, society, and education have necessitated reform of technological and vocational education (TVE) in Taiwan. Recommended reforms are as follows: relaxing educational regulations, accepting every student into higher education, streamlining channels to higher education, raising educational quality, and creating a lifelong learning society. The government has responded to needs for such reforms by proposing and implementing four categories of strategies and initiatives: (1) a flexible TVE system can be reached by increasing the number of continuing education institutions, revising the curricula, and providing multiple channels for school entrance; (2) for sustainable national economic development, TVE should provide professionals trained in foreign languages, finance, hospitality and travel, transportation, telecommunications, information processing, and film and television; (3) educational equity of TVE can be achieved by 10-year compulsory education, comprehensive high schools, multiple channels for school admission, and planning for lifelong learning; and (4) skill certificates should be emphasized as an indicator of occupational competencies and be considered for continuing education, employment, and job promotion. TVE can serve students' needs for employment or continuing education and become an integral part of the lifelong learning process. Skill certificates to improve students' occupational competencies required in the work world should be emphasized, and TVE must be continually improved to develop a world class work force. (Contains 11 references.) (YLB)

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New Directions for Technological and Vocational Education Reform in Taiwan, Republic of China

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New Directions for Technological and Vocational Education Reform in Taiwan, Republic of China

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Robert T. Y. Wu

Abstract

Changes brought about by technology, the economy, society, and education itself, have necessitated the reform of Technological and Vocational Education (TVE) in Taiwan, Republic of China. This paper addresses the underlying reasons for making the transformation, the current status of the TVE system, the new directions for the reform of TVE, and the designed strategies and reform initiatives in line with these directions.

The government responded to the needs for such reforms by proposing and implementing a series of strategies and initiatives. A summary of the directions, strategies, and initiatives can be categorized into the following four aspects:

(1) A flexible TVE system can be reached by increasing the number of continuing education institutions, revising the curricula, and providing multiple channels for school entrance.

(2) For sustainable national economic development, TVE should provide necessary professionals trained in foreign languages, finance, transportation, telecommunications, hospitality and travel, information processing, and film and television.

(3) Educational equity of TVE can be achieved by 10-year compulsory education with the "Practical Skill Training Program", the introduction of comprehensive high schools, multiple channels for school admission, and planning for life-long learning.

(4) Skill certificates should be emphasized as an indicator of occupational competencies, and be considered in the admission of continuing education, employment, and job promotion.

Several trends in TVE are becoming apparent. TVE can effectively serve the students' needs for employment or continuing education, and become an integral part of the life-long learning process. It also stresses skill certificates to improve students' occupational competencies required in the work world. In order to meet the challenge of the 21st century for a world class workforce to compete with other countries in the global economy, TVE in Taiwan must continually be improved with effective strategies and initiatives.

Key words: educational reform, technological and vocational education, new directions

Educational reform movements in most countries of the world have prevailed since the 1980's. Despite the unique forming background of any country, education reform usually becomes the top priority in many developed countries (Shen, 1998). Meantime, in order to maintain an abundant supply of highly skilled, world-class workers and to compete in the global market, Technological and Vocational Education (TVE) plays a pivotal role in providing such a workforce. The changes brought about by technology, the economy, society, and education itself, have necessitated the reform of TVE in Taiwan, Republic of China. This paper elaborates the factors influencing the reform of TVE, the current status of the TVE system, the new directions for the reform, and the designed strategies and reform initiatives in line with these directions.

Factors Influencing Technological and Vocational Education Reform

Technology is the first influencing factor contributing to the reform of TVE in Taiwan. Norri (1990) described technology as the permanent wave, instead of the first, second, or third wave. Industry utilizes new technologies with an aim to gain a greater market share. On the other hand, TVE is interested in the use of accepted technology. Globalization, automation, and information transformation become crucial to economic development (Allen & Wircenski, 1998). In 1996, the per capital GNP in Taiwan reached US$12,872. Foreign reserves of over US$90 billion have been accumulated, and the unemployment rate has fallen from 4.5% in 1951 to around 2.0% in recent years. In order to maintain the stable economic growth and a high living standard, there has been the development of high technology industries. Technological changes, especially in information technology, are forcing workers to learn new skills. TVE should respond to the new technological development by revising current curriculum, replacing training equipment, and providing extension education programs. TVE is actually experiencing constant impact from new technologies. Yang (1997) suggested that general skills and abilities, proficiency in skill specialization, creativity and analytical ability should be offered through TVE. Thus, work satisfaction and necessary adjustments of the TVE graduates can be reached.

For the past four decades, the economic development has been well planned by the government and TVE provided the required technical human resources. In the

1950's, production in agriculture and industry were emphasized. Junior and senior vocational high schools provided the technicians needed. In the 1960's, labor-intensive industries expanded and the industrial output increased significantly. TVE expanded as well to set up more senior vocational schools and junior colleges. In the 1970's and 1980's, the economic development demanded the shift of industries from labor-intensive to technology-intensive and capital-intensive industries. Hence, TVE also needed to establish more junior colleges and institutes/universities of technology. In the 1990's, the government launched the "Asia-Pacific Regional Operation Center Plan" and other economic plans with an aim to facilitate the development of high-tech industries and the "Asia-Pacific Technology Hub". TVE responded to the situation by revising curriculum to match the demand for competent technicians and professionals for industry (Chiang, 1997; Yang, 1997).

Social change is another factor contributing to the reform of TVE. After the lifting of "Martial Law" in 1987, the transformation of the political system perpetuated the environments for educational reform (Wu, 1998). People started to ask for more civil rights, including educational liberalization and democracy. Non-government organizations promote the reform of the existing educational system. The society needed to accommodate the reform movement by some mechanism. One of the mechanisms was to follow a series of legislation. Education authorities responded to the need for educational reforms and enacted some related regulations such as the "University Law", the "Teachers' Law", and the "Cultivation of the Teacher's Law". All these newly issued regulations stressed the importance of students' rights of education and the rights of self-choice (Yang, 1997).

More educational opportunities for further education were also emphasized by the provision of multiple channels for moving up to a higher level of education, including more junior colleges, institutes/universities of technology. Therefore, social mobility and equity through education can be assured.

Education itself is another factor affecting the TVE reform (Shen, 1998). Students, parents, teachers, taxpayers, and employers all participated in the movement. Ideally, students received career guidance, mad their career training choices, and then expressed their career expectations. Parents requested more educational opportunities in TVE for their children to further their studies. One of the underlying reasons is because of the diploma, which is over-emphasized in society. Educational liberalization to some people means open education in which students have easy access to a higher level of education. The Ministry of Education tried to open the second educational pathway (a pathway for students in the TVE system), to provide flexible delivery of TVE (more schools opened to TVE students), and to

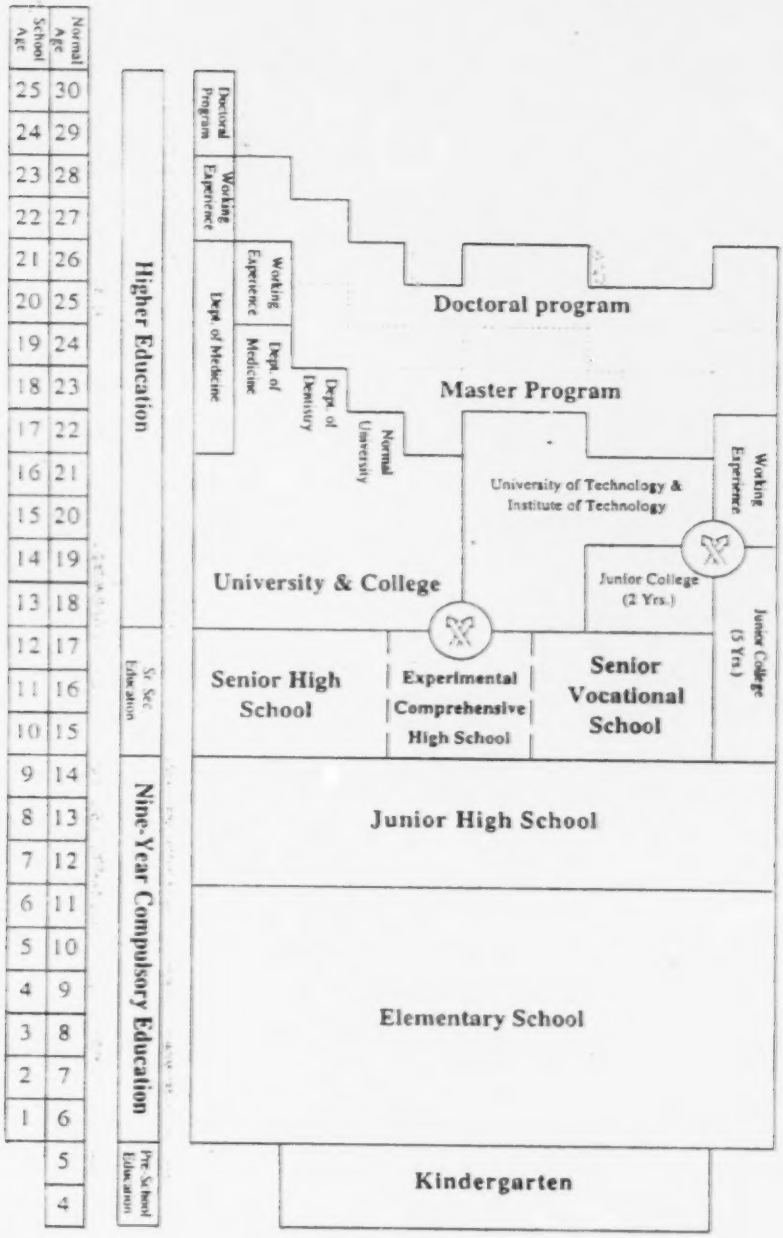
promote life-long learning in the learning society.

Features of Taiwan's TVE Context

The Technological and Vocational Education (TVE) system in Taiwan consists of three levels: senior vocational schools, junior colleges, and institutes/universities of technology (see Figure 1). Senior vocational schools provide offerings in daytime and evening programs, cooperative education programs, practical skill programs, special vocational programs, and supplementary programs. Junior colleges offer two-year and five–year programs. The two-year programs are designed for senior vocational graduates while the five–year programs are for junior high school graduates. Institutes/universities of technology have the following offerings: undergraduate, master's, and doctoral programs. The undergraduate programs are two-year and five-year programs. The two-year programs enroll junior college graduates while the four-year programs admit graduates of the senior vocational schools (see Table 1).

For the 1997 academic year, there were 20 institutes/universities of technology with 46,875 students, 61 junior colleges with 433,865 students and 199 senior vocational schools with 509,064 students. In total, TVE students accounted for 60.0% of the number of students in upper-secondary and post-secondary schools (Ministry of Education, 1998).

The educational system is a centralized one. Although, along with political, social, technological, and educational changes, the system has become less centralized. The schools in the system are enjoying more autonomy to develop their own features. Various efforts are being taken by the education authorities. Among these efforts, the Technological and Vocational Education Law has been one of the important results, which established a composite framework for TVE. Hopefully, it will move TVE toward a system of more flexibility, multiple channels of school entrance, diversity in courses and curricula, and life-long learning.



CURRENT SCHOOLING SYSTEM

Figure 1
Current Schooling System

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Table 1

Comparison of Student Numbers between General Education and TVE Schools in 1997-98 Academic Year

Category		General	TVE	Total	TVE Students	
					Number	Percentage
Elementary				1,905,690		
Junior High School				1,074,588		
Senior Secondary School		291,095*	509,064	917,845	626,750	63.3%
Junior college (5Yrs.)	Lower 3		117,686			
	Upper 2		79,500	316,179	316,179	31.9%
Junior College (2 Yrs.)			236,285			
Junior College (3 Yrs.)**			394			
University & Institute/University of Technology		323,081	44,331	416,031	46,875	4.7%
Graduate		46,075	2,544			
Total		660,251	989,804			
Percentage		40.0%	60.0%	1,650,055	989,804	100.0%
Ratio		1:1.50				

*This number includes 20,508 students in experimental comprehensive high schools.

**The three-year junior college programs have been phased out.

Note. From "*A brief introduction to the technological and vocational education of the Republic of China.*" by the Department of Technological and Vocational Education, Ministry of Education, R.O.C., 1998, p. 6.

New Directions for the Reform of Technological and Vocational Education

The development of TVE in Taiwan has resulted in quality human resources that created the brilliant economic growth of the past. Until now, the educational environment has been changing so fast that vocational educators and researchers have found some of emerging problems existing in the TVE: low passing ratios on the entrance examinations for continuing education, low social acceptance of skill certification, insufficient TVE students' academic competencies, and the need for a life-long learning system. For example, in 1997, only 6% of the junior college

graduates had the opportunity to enter two-year programs in the institutes/universities of technology. Approximately less than 30% of the total vocational school graduates were accepted to enter upper educational institutions. Low social acceptance of skill certification resulted from the weak linkage between certificates and employment. The curriculum design in TVE usually stresses the technical and professional skills and disregards students' educational aspirations. Therefore, TVE students lack academic competencies in mathematics, language, and social relationships. Longer life expectancy, economic prosperity, and technological change paved the way for continuing education and in-service education. The TVE schools can meet the need by increasing the number of junior colleges and institutes/universities of technology.

In 1996, the Executive Yuan (1996) published the Review Report on Educational Reform which recommended five areas of reform: relaxing educational regulations, bringing up every single student, streaming the channels to higher education, elevating overall educational quality, and establishing a life-long learning society. The Ministry of Education synthesized the recommendations by conceptualizing the three educational highways, including general education, technological and vocational education, and extension education. The second educational highway is comprised of primary schools, junior high schools, senior vocational schools, junior colleges, and institutes/universities of technology (Yang, 1977). Yang (1997) further pointed out the policy directions of the Ministry of Education as follows:

(1) to meet the need for educational reform and to establish a flexible vocational education system;

(2) to cope with social evolution and to cultivate technical human resources;

(3) to cope with demands of students' parents and to help students in career planning; and

(4) to cope with the way the world is evolving and to elevate the quality of the overall educational system.

Strategies and Reform Initiatives in Line with the New Directions

After the determination of the policy directions, the Ministry of Education (MOE) then takes a series of strategies and reform initiatives accordingly. These strategies and initiatives consist of four sections: a flexible TVE system, the training

of a workforce for economic development, the educational equity of TVE, and initiatives regarding skill certification and TVE.

A Flexible TVE System

In the TVE system, only a few students could be admitted to enter schools, which are one level above their graduating schools through entrance examination. There are two ways to elevate the situation. One way is to increase the number and capacity of junior colleges, and institutes/universities of technology. And the other way, is to move toward a system with multiple channels of entrance and flexible curricula for students with various backgrounds, including regular students, minorities, employees, and interested adults (Yang, 1997).

More junior colleges will be promoted to the level of institutes of technology while still maintain the functions of junior colleges so that they will have both two-year and four-year programs to offer senior vocational school graduates more educational opportunities. By the year 2000, it is expected that more than 50 institutions will be available to vocational students who seek for higher degrees. Furthermore, the TVE system comprises universities of technology, institutes of technology, junior colleges, senior vocational schools, and comprehensive high schools. TVE students can thus, easily pursue further degrees by applying to higher institutions (Lin, 1998). This drastic change assures both the quality and quantity of TVE.

The Training of a Workforce for Economic Development

In view of developing our country to be the Asia-Pacific Economic Hub, the Committee of Economics and Construction (Chiang, 1997) recommended the following strategies: to increase the number of professionals for industry, to supply more professionals in international trade and service industry, to promote adult education and in-service education, and to encourage the TVE graduates to join the workforce. More specifically, Yang (1997) and Chiang (1997) suggested seven major training areas in TVE: foreign languages, finance, transportation, telecommunications, hospitality and travel, information processing, and film and television. The training in the above fields will have positive impacts on the quality and quantity of the manpower needed for national economic development.

Educational Equity of TVE

Educational reform mandates equal educational opportunities. From the traditional point of view, TVE is usually thought of as a terminal education. However, considering the concepts of career development and life-long learning, TVE should function as an open entry and open exit type of education. The adopted strategies are the implementation of 10-year compulsory education with the "Practical Skill Training Program", the introduction of comprehensive high schools, multiple channels for school admission, and the planning of life-long learning.

The Practical Skill Training Program gives students opportunities to make decisions for their career development path. Through career guidance in schools, students can choose occupational subjects or academic courses based on their career preferences. Comprehensive high schools also offer students academic, vocational, and general education pathways, and students can choose one of the pathways freely. On the other hand, multiple channels for school admission can release the tension of passing the entrance examinations with very low passing ratios. Junior colleges, functioning as community colleges, are now planning to serve in continuing education, in-service education, and extension education. In fact, all the levels of TVE are prepared to accept people who wish to continue their education. In summary, all the four strategies ensure the educational equity of TVE.

Initiatives Regarding Skill Certification and TVE

Senior vocational students are encouraged to take the skill tests so that they can graduate from schools with both diplomas and skill certificates. In 1996, 49.3% of the senior vocational students passed the c-level certificate tests (Lin, 1998). The MOE is trying to build up students' occupational competencies rather than just to issue diplomas. Furthermore, the possibility of equalizing different skill certificates to respective equivalent levels of diploma paves the way for students to enter schools more easily. Meantime, skill certificates also can serve as an important weighting factor in national examinations, employment, and job promotions.

Conclusions

Educational reform movements have had tremendous impact on Technological and Vocational Education (TVE) in Taiwan, R. O. C. today. The government responded to the needs for such reforms by proposing and implementing a series of

strategies and initiatives. A summary of the directions, and the strategies and initiatives can be categorized into the following four aspects:

(1) A flexible TVE system can be reached by increasing the number of continuing education institutions, revising the curricula, and providing multiple channels of school entrance.

(2) For sustainable national economic development, TVE should provide necessary professionals-trained in foreign languages, finance, transportation, telecommunications, hospitality and travel, information processing, and film and television.

(3) Educational equity of TVE can be achieved by 10-year compulsory education with the "Practical Skill Training Program", the introduction of comprehensive high schools, multiple channels for school admission, and planning for life-long learning.

(4) Skill certificates should be emphasized as an indicator of occupational competencies and considered in the admission of continuing education, employment, and job promotion.

Subsequent implementation measures to carry out the above strategies and initiatives are mostly underway. However, curriculum is a key element for all the designed programs involved in these strategies and initiatives. The curricula should be databased, dynamic, explicit in outcomes, fully articulated, realistic, student-oriented, evaluation-conscious, and future-oriented (Finch & Crunkilton, 1993). In addition, the full involvement of classroom teachers in all the stages of the curriculum development process is an important factor in determining the success of the programs.

Several trends in TVE seem obvious. TVE can effectively serve the students' needs for employment or continuing education (Lin, 1998), and become an integral part of the life-long learning process. It also stresses skill certificates to improve students' occupational competencies required in the work world. In order to meet the challenge of the 21st century for a world-class workforce to compete with other countries in the global economy, TVE in Taiwan must continually be improved with effective strategies and initiatives.

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